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Labour market change
**Skills utilisation: Definition,
theories, approaches
and measures**

Background paper for European Company Survey 2019

<https://www.eurofound.europa.eu/surveys/european-company-surveys/ecs2019>

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Introduction

Skills have become a major competitive factor for many countries and have been emphasised in national economic and social policies (OECD, 2011). It is therefore not surprising that governments at all levels in the EU – supra-national, national and sub-national – have skills strategies. These strategies have typically centred on boosting the supply and stock of skills in the labour market. The European Commission's Agenda for New Skills and Jobs (2012) is one such example, arguing for a higher-skilled workforce across the EU through investment in training and education. However, for most companies, skills, in the form of workforce development is a third-order consideration after business development and organisational development (Warhurst and Findlay, 2012). As a consequence, whilst many companies have business strategies that include skills, few have skills strategies per se.

Boosting the supply of skills on the labour market is therefore important but not sufficient: these skills need to be put to use within companies. Without considering how skills are used, the potential exists for creating a mismatch between skills supply and demand (Keep and Mayhew, 1999; Warhurst and Thompson, 1999). Indeed, this problem seems evident in the context of ongoing 'over-qualification' amongst the workforces of the advanced economies (Felstead et al, 2017; Livingstone, 2017) resulting in 'untapped talent' at best (Skills Australia, 2012b) or, at worst, a waste of human resources (OECD, 2011) within companies.

As governments refresh their skills strategies, there is an increasingly pressing need for a framework to assist the design and implementation of new policies that encompass both skills supply and demand (OECD, 2011; EC, 2012). Understanding skills utilisation has become important in this context. Skills utilisation refers to the way that employers use the skills of their employees (Ashton and Sung, 2011). Employees' use of skills is shaped not only by their own abilities but also by the human resource practices adopted by companies, which in turn are shaped by the choices that managers, as employers in loco, make about how to manage and organise their workplaces (Ashton et al, 2017). These choices can lever or impede skills utilisation and can have negative and positive outcomes for companies. Skills under-utilisation can lead to a loss of human capital and reduced productivity and job satisfaction (OECD, 2011). Unused skills can also degrade or be lost over time (Clark, 1995). By contrast, better use of skills can improve companies' innovation, profitability and productivity as well as employees' job satisfaction, engagement and retention (Skills Australia, 2012b). Significantly, skill use is not predetermined; choices exist and there is policy scope for governments to help support better skills utilisation within companies (Warhurst and Findlay, 2012; OECD, 2017).

Good information about skills utilisation is therefore needed. Generating this information requires addressing two key tasks: defining and measuring skills utilisation. This background paper focuses on these tasks. Its aim is to inform how the European Company Survey (ECS) 2019 can capture skills utilisation at the company level in the EU. The paper has four main sections. The first focuses on the definition of skills utilisation. The second section identifies the theoretical drivers of skill use within companies. The third section reviews existing survey measures of skills in companies, including in the ECS 2013. The fourth section offers recommendations for including measures of skills utilisation in the ECS 2019. Annex A lists the surveys analysed for this paper; Annex B lists possible questions about skills utilisation for inclusion in the ECS 2019.

What is skills utilisation and why is it a problem?

Before skills utilisation can be defined, there are two issues that need to be raised: the nature of skills and skills level. Both issues relate to how skills utilisation is measured. Relatedly, there are different approaches to conceptualising skills utilisation. This section outlines these issues and approaches as important context for the recommendations about how to incorporate skills utilisation into the ECS 2019.

Types of skills and skills levels

With regard to types of skills, there is no scientific or policy agreement on what constitutes a ‘skill’. What is regarded as a skill changes over time (Grugulis et al, 2004; Warhurst et al, 2017). Use of the term ‘skill’ has become very broad in recent years. It can mean simply being able to do a task, as well as having mastery of that task (Attewell, 1990). In some countries, ‘skill’ still refers to having and being able to apply accredited vocational knowledge acquired through a mixture of formal and on-the-job learning. In other countries, it means ‘what employers want’ (Lafer, 2004, p. 118) including, for example, being honest, punctual and hard-working in the context of undertaking work-related tasks. Skills can be technical, behavioural/social, cognitive and basic (Mournie, 2001; Green, 2011). ‘Skills’ is thus broadly defined and lacks common definition and measurement internationally (Cedefop, 2017).

In the absence of consensus, there is a tendency to recognise skills that can be measured—skills that are credentialised with qualifications (Felstead et al, 2017). Qualifications can be thought of as a way of formally codifying particular skills which tend to be gained through formal academic or vocational education systems into a shared language which is understood by individuals, employers, educators and governments. Definitions of the term ‘qualification’, and particularly how it might be differently interpreted depending on whether the qualification referred to is academic or vocational, differ across countries (for example, Brockman et al, 2011). One consequence is that qualifications and skills tend to be conflated, even treated as synonymous. However, differences have been found between qualification and skills in studies that have measured both (for example, Desjardins and Rubenson, 2011; Quintini, 2011). This difference explains why some university graduates who are employed in non-graduate jobs and so may be viewed as ‘over-qualified’, report a good match between their skills and those needed for their work (Tholen et al, 2016) and, conversely, why only particular types of mismatch have negative impacts on graduates’ job satisfaction (Allen and van der Velden, 2011). Nevertheless, qualifications are treated as a useful proxy because comprehensive and comparable data exist across the developed economies. As a consequence, most assessments of the extent of skill (under-) utilisation use qualifications as the measure.

With regard to the second issue, skills levels form an important part of analyses of skills utilisation. It should be noted that there are absolute and relative levels of skills. Absolute skills levels refer to the stock of skills in the labour market and in workplaces, again typically using qualifications as the measure. In recent years, EU countries have been keen to implement policies and practices to ‘upskill’ their workforces to raise the stock of skills to become more competitive ‘high-skill economies’ (for example, Lloyd and Payne, 2004). Adopting a relative approach to skills levels differentiates between skills possessed by the worker and skills required for the job. Each can be relatively higher or lower than the other, resulting in mismatches. The level of mismatch varies by country. For literacy, nearly 28% of workers in Greece report being overskilled in the Survey of Adult Skills (Programme for the International Assessment of Adult Competencies, PIAAC), compared to less than 6% of workers in Sweden for example. For numeracy, the figure is 22% in Greece compared to 5% in the Netherlands. Interestingly, across all OECD countries, more workers report being overskilled than underskilled in literacy and numeracy (OECD, 2017)

There is another important distinction to be noted here: employer demand for skills envelops the skills needed to get the job and the skills needed to do the job (Warhurst and Findlay, 2012). Most analyses focus on the first type of demand but the two can be quite distinct. With respect to the skills needed to get the job, as higher education provision has expanded in the developed economies, employer demand for skills has increased. Many employers, faced with a supply of better-qualified applicants, hire workers with better qualifications, viewing the possession of qualifications as a signal of

capability (Rothschild and Stiglitz, 1976). However, this employer behaviour tends to lead to ‘qualification inflation’: the required qualification levels to obtain jobs spiral upwards and jobs which were previously non-graduate are nowadays graduate jobs (Elias and Purcel, 2004) and will likely become postgraduate jobs in the future. The problem, as James et al (2013) note, is that, for a number of reasons, employers might not recognise or deploy these higher-level skills.

For matching to occur, as the stock of skills on the labour market rises, so must the stock of jobs requiring these skills: demand meets supply. Too often, supply outstrips demand, resulting in ‘overqualification’ in the labour market. Felstead et al (2017) point out this type of mismatch ‘dwarfs’ that of skills shortages. For example, around 20% of the Canadian workforce is overqualified for the jobs on offer in Canada (Livingstone, 2017); likewise, about 30% of the UK workforce is overqualified (Felstead et al, 2007). This over-qualification amongst workforces now seems to be structural – that is, in-built oversupply exists (for example, Purcell and Elias, 2016).

Importantly, the distinction between the skills needed to get the job and the skills needed to do the job helps to refine understanding and measurement of skills underutilisation. Workers can be formally overqualified at point of hire – for example, have more skills than formally needed to get the job – but still report having a good skills match and good skills utilisation once in work – for example, in doing the job they do not feel that their skills are being under-used. Here a second distinction needs to be made between overqualified and overskilled employees (Felstead et al, 2017). Employees who are overqualified to get the job and who are unable to use their skills in work are ‘real overqualified’; those overqualified to get the job but are skill-matched in doing the job are just ‘formal overqualified’. Using this formulation, the 30% of workers in the UK workforce who are formally overqualified drops to 16% for those real overqualified (Felstead et al, 2007, 2017). Significantly, workers who are real overqualified tend to experience worse pay and job satisfaction than those who are formal overqualified or those who are matched (Green and Zhu, 2010; Okay-Sommerville and Scholarios, 2013).

In debates about skills (under-)utilisation, it is these relative levels that are the focus – that is, whether a match or mismatch occurs between the skills possessed by the employee and the skills needed to do the job. When the skills possessed by the person exceed the skills needed to do the job, it is referred to as ‘untapped talent’ (Skills Australia, 2012b) that ‘represents a waste of resources’ (OECD 2011, p. 19) and creates a ‘performance gap’ (Livingstone, 2017) between what workers produce and what they could produce under different circumstances. The remedy is the ‘better use of skills’ to ensure ‘effective skills utilisation’ (Warhurst and Findlay, 2012). The key issue then becomes the conditions under which this better skills use might occur.

Conceptual approaches to effective skills utilisation

There are two common conceptual approaches to effective skills utilisation. The first is a matching approach (Warhurst and Findlay, 2012; also Cedefop, 2010). Drawing on economic and sociological literatures, and echoing the discussion above, it distinguishes between the skills possessed by the person (P) and the skills required to do the job (J). This approach leaves open to empirical investigation the types of skills possessed and required, and instead assumes that effective skills utilisation occurs when the skills possessed by the employee and the skills needed to do the job are matched (Table 1). Skills underutilisation occurs when the worker has a surplus of skills so that the skills possessed exceed those needed to do the job. Skills gaps occur when the workers have a deficit of skills so that the skills possessed are less than that needed to do the job (Gambin et al, 2016). Each configuration also suggests remedial actions to maintain or create effective skills utilisation.

A version of this approach is one advocated by the OECD (2011). The OECD notes that the quality and extent of labour market information varies. It suggests that there should be better external signalling by companies of the skills needed to do the job as part of recruitment and selection. More appropriately skilled workers would then apply and be hired for these jobs creating a better skills match with the work for which they have been hired by these companies.

Table 1 - The skills matching approach to effective skills utilisation

Configuration	Meaning	Remedial action
P=J	The skills of the person and job are matched, so that the skills of the person are being fully used in work.	None, though employer monitoring advisable to ensure skills matching is maintained for example, through skills audits and job evaluations.
P<J	The person lacks the skills to do the job and so a skills gap exists.	Use of better skills needed, so upskilling of the worker required through training and education; alternatively hire and replace with a better skilled worker.
P>J	The person has more skills than their job needs and so is underutilised.	Better use of skills needed by the employer in order to tap into the under-used potential of the worker. Different management and organisation of work required.

Source: Adapted from Warhurst and Findlay (2012).

The matching approach to skills utilisation can be operationalised by looking at whether the skills set workers possess is appropriate for the job; the proportion of workers able to deploy their skills in work; what qualifications are required for the job; the opportunities for training; employee discretion over tasks, standards and pace of work, and other associated measures of job autonomy; and learning-intensive jobs and the nature of the organisation of work (Payne, 2013). A practical issue, however, is the reliability of employer surveys, such as the ECS, which have mainly employer respondents, to be able to accurately report for employees on these matters.

Table 2: The AMO approach to skills utilisation

Component	Definition
Ability	Having an appropriately skilled workforce, through recruitment, selection and training. These skills include general as well as occupation- and firm-specific skills and being multi-skilled.
Motivation/incentives	Three types: <ul style="list-style-type: none"> • extrinsic/financial, meaning ‘gainsharing’ reward systems, distilled down to ‘pay-for-performance’ earnings; • intrinsic, meaning workers being challenged in work, thereby inducing greater satisfaction and commitment; • induced through an organisational ‘climate of trust’ and workers having long-term stake in the organisation.
Opportunity	Workers having substantive participation in work, which requires them having: <ul style="list-style-type: none"> • responsibility and authority to problem solve; • greater autonomy and control over decisions; • capacity to coordinate and communicate their decisions to the wider organisation.

Source: Appelbaum et al (2000).

The second is an enablers approach. Grounded in the human resource management literature (for example, Becker and Huselid, 1998; Boxall and Purcell, 2011), it centres on identifying and encouraging human resource practices that facilitate skills utilisation. As an approach, it sometimes conflates skills and knowledge as features of this effort. When it focuses on skills, it recognises skills as being broadly conceived, including technical, social and basic skills. It also draws on the promotion of High-Performance Work Systems (HPWS). In policy terms, HPWS are defined as ‘a general approach to managing organisations that aims to stimulate more effective employee involvement and commitment to achieve high levels of performance’ (Belt and Giles, 2009, p. 17).¹ Appelbaum et al (2000) argue that HPWS provide the optimal system for employers to elicit discretionary effort and

¹ Emphasis in the original.

identify three components of effective HPWS: workers having the ability, opportunity and motivation to use their skills – the so-called ‘AMO’ framework (Table 2).² Effective skills utilisation only occurs when all three components of the AMO framework are in place (Warhurst and Findlay, 2012).

Although assessments of HPWS tend not to include measures of skills utilisation per se, the assumption is that skills utilisation will be high in companies with HPWS.

However, using HPWS as the central concept for the definition and measurement of effective skills utilisation is problematic. First, there is no consensus on which human resource practices comprise the HPW ‘system(s)’. Different researchers adopt different models, with large differences in the number of practices included: Delery and Doty (1996) suggest seven; Sung and Ashton (2005) suggest 35, for example. Second, companies that adopt all or even most of these practices are a minority, and more likely to be large rather than small companies (UKCES, 2014), raising the question of how skills utilisation occurs and how it might be adequately captured in companies not engaging in HPWS. Third, despite claims of mutual gains, the evidence suggests that whilst business performance can improve, employee outcomes can be mixed: some studies report workers gaining more intrinsic reward with greater job satisfaction and higher task discretion; others report work intensification and higher stress (Appelbaum et al, 2000; Godard, 2001; McGovern et al, 2007). Fourth, too easily overlooked is the fact that workers in organisations with more HPW practices also tend to earn more – that is, have greater extrinsic motivation (Warhurst, 2014). Fifth, research on HPWS also tends to overlook the extent to which adoption of HPWS translates skills development into skills use (Payne, 2013) – that is, research tends to focus more on workers having the ‘A’ than ‘M’ or ‘O’.

Overall, the matching approach to skills utilisation has the advantage over the enablers approach because it focuses directly on employees’ skills (usually measured through self-reported proficiencies in certain skills or through qualification/years of education/duration of training). The main limitation is that in jobs in which employees’ skills are matched there is no incentive to develop these skills further. Moreover, the matching approach omits what makes some employees able to take or even make opportunities to use their skills in some workplaces but not in others (Luchinskaya, 2016) – a weakness that is the strength of the enablers approach. In the form of HPWS, the enablers approach provides a framework for measuring the contextual, even ‘critical’, factors which induce better skills utilisation (Skills Australia, 2012b; SQW, 2010).

What drives skills utilisation in companies?

There are two main theories about what drives skills utilisation within companies. The first centres on the influence of companies being embedded in different national contexts. The second centres on the influence of product market strategies pursued by companies. Both have mixed empirical support, which is why a third theory based on employer choice is now emerging. In part drawing on overviews provided by Ashton et al (2017) and Knox and Warhurst (2018f), this section outlines and reviews each theory in turn.

Skills and national institutional embeddedness

Institutionalist theory and variants³ of it – for example, Societal Effects (Maurice et al, 1980), Business Systems (Whitley, 1992) and, the most influential currently, Varieties of Capitalism (Hall and Soskice, 2001) – have become popular across the economic, political and social sciences to explain why companies in one country are managed and organised differently compared to companies in other countries.

² Appelbaum et al refer to both ‘incentives’ and ‘motivations’, but it is the latter term that is used most in subsequent research.

³ Thelen (2004), for example, is critical of early institutional theory but favours a form of neo-institutionalism when she argues that different skill ‘settlements’ exist in different countries. These settlements are accommodation of the conflicts and necessary cooperation between employers and employees, typically mediated by the state.

The reason for this difference lies in the influence of country-specific configurations of institutions. These institutions include financial markets, employer organisations, trade unions, welfare provision, employment regulation, and education and training systems. How these institutions relate to and influence each other creates different configurations that can be analysed using a ‘typologies of capitalism’ approach to understand the business strategies of companies within countries (Crouch, 2009; also Whitley, 1992; Hall and Soskice, 2001). These configurations influence company organisation. For example, senior managers adopt organisational forms that are regarded as legitimate within the normative order of the configuration. The way that companies are managed and organised is therefore symbolic rather than technically superior. The consequence is that companies within countries come to resemble each other in terms of their management and organisation. Homogeneity amongst companies thus occurs at the country level (DiMaggio, 1986, 1990). In short, companies become miniature versions of the country in which they are embedded.

This company embeddedness plays out on skills, particularly the types of training available and the level of skills for use by companies (Estevez-Abe et al, 2001; Tholen, 2004; Bosch, 2017). For example, the Airbus is assembled in Germany by workers who have completed formal vocation training; in Spain, France and the UK, this work is undertaken by workers who acquired their skills through on-the-job learning (Bosch, 2017). An early and influential explanation amongst policymakers (OECD, 2010) for such differences was Finegold and Soskice’s (1988) account of the persistence of a low-skill equilibrium in the UK. In the UK, there is a self-reinforcing configuration of institutions that interact to stifle improvements in skills levels – hence the UK is trapped in low-skill equilibrium, they argue. A second, currently influential explanation amongst researchers is the distinction made in the varieties of capitalism approach between Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). These different types, exemplified by the UK and Germany respectively, have different forms of work organisation, which affect the skills to be used. In contrast to the UK, Germany has high-skill equilibrium, with ‘beneficial constraints’ (Streeck, 1997) that disincentivises companies from competing on low cost goods and services and instead encourages them to compete on quality.

Critics of this approach have argued that it implicitly seeks to defend the German model or promotes a dualist opposition between CMEs and LMEs that is not empirically tenable (Allen, 2004; Crouch, 2009; Kenworthy, 2009). For example, it is pointed out that national ideal types may not be applicable to all sectors within a country. In the UK, there are pockets of high skill companies (Mason, 2004) and in Germany, service companies align less well with CME expectations than manufacturing companies, with less training and technical skills use (Eichhorst and Marx, 2009). Moreover, there can be good practices developed at company-level which then have ‘dominance effects’ and spread to other companies regardless of country (Smith and Meiksin, 1995). Such variability is a challenge to the determinism of institutionalist theories. In this respect, institutionalist theories are better at explaining continuation of models of management and organisation by companies and less good at explaining how companies change, and the role of managers in that change. Neo-intuitionist theories try to rectify this problem by building into the analysis awareness of managerial choices within the constraints of embeddedness. ‘Actors do not adhere slavishly to a script written for them,’ explains Granovetter (1985, p. 487). Instead, purposive action can exist even if companies are embedded in ‘concrete, on-going systems of social relations’. The point is that choices can be made within constraints and change is thus possible.

Skills and product market strategies

Porter (1980) influentially identified three models of competitiveness that might be pursued by companies: cost reduction, quality enhancement and innovation. Recast as product market strategies, Schuler and Jackson (1987) linked these different business strategies to different human resource management practices, including skills. The argument is that different product market strategies require different skills. Companies pursuing quality-based strategies work ‘smarter’, they claimed, levered by more training and skills development. Companies pursuing cost reduction strategies work ‘harder’, providing minimal training and skills development. As such, companies start with business development, which then shapes organisational development (loosely defined) and to which, in turn, workforce development is aligned. Schuler and Jackson’s research initially received confirmatory

support from other research examining both manufacturing and services companies (Knox and Warhurst, 2018f).

Subsequent research, focused on services, produced more mixed evidence. Examining UK sector level data, Mason (2004) found differences between sectors, with a stronger link between product market strategy and skills in manufacturing and a weaker link in services. In other research, Mason et al (2000) noted variations across service industries; in some service industries, such as the hotel industry, higher-quality product market strategies do not appear to be associated with higher levels of skills. Other researchers have gone further, questioning the existence of any linkage in services industries. Comparative studies of the fitness and hotel industries show either ‘no clear link between competitive strategy and skills’ (Lloyd 2005, p. 15) or that any link is even ‘decoupled’ (Lloyd et al 2013, p. 267). Significantly, research from other countries, for example the US (Bernhardt et al, 2003) and Germany (Eichhorst and Marx, 2009), has reached similar conclusions.

While there is a widespread view that there is a link between different types of product markets and skills, recent research could not find respective evidence. In the existing literature Asthon et al (2017) found links between the product markets and skills in the manufacturing sector; however, for services some literature point towards links while other publications reject it.

Is managerial choice the answer?

With doubts about the determinism of national institutional embeddedness and product market strategies, an alternative theory has emerged about what drives the use of skills in companies. This theory centres on managerial choice. When researching service companies, Sung et al (2009) found that some employers competing in higher-quality markets were actively upskilling their workforces whereas others in the same product markets were relying on low-skilled workforces. In other words, variation in skills utilisation exists even within the same product market strategies. Based on these findings, they concluded that ‘[e]mployers ha[ve] considerable discretion over whether or not they chose to enhance the skills of their labour force’ (p. 6).

Managers’ choices support competitive strategies. Companies that compete on cost tend to be task-focused (geared towards developing only the skills necessary to perform a set of narrowly defined or elementary tasks) and managers seek tight control over the workforce, reducing its skill capabilities. Companies that compete on quality tend to be people-focused (geared towards developing skills such as communication, problem solving etc.) and managers seek to harness and develop workforce skills. More ambiguously, Sung and Ashton (2015) suggest that the degree of managerial choice only perhaps extends to the selection of product markets. Thereafter these markets ‘shape’ skills levels, for example, stating there is ‘a higher probability that where competition is on the basis of quality ... the skills of most employees become more significant’ (p. 193). However, other research supports the general argument that national institutions are not determinant and that choices are available. For example, focused on management skills, Sadaun et al (2017) found that big within-country variation exists at company level in the quality of these skills. They also note that those companies with higher management skills have CEOs who dedicate more time to employees than outside stakeholders. Furthermore, companies with better management skills perform better. As to why more companies do not improve their management’s skills if performance gains accrue, the authors suggest that managers are often poor judges of the quality of their own skills and too few do cost-benefit analyses of their skills that would reveal the potential gains.

There is good case study research internationally that highlights that managers do make some sort of cost-benefit analysis and then make choices about policies and practices that centre on skills utilisation – though often for very practical reasons (Skills Australia, 2012a; SQW, 2010). Skills Australia distinguishes between the ‘triggers’ of skills utilisation – or the reasons why companies adopt skills utilisation strategies – and ‘levers’ of skills utilisation – or the factors that enable better use of skills (Table 3). In their Australian case study companies, senior management first identify the need for skills utilisation, for example because of tight labour markets or compliance with government regulation or the desire to shift into new product markets, and, second, are the driving force behind

the introduction of policies and practices that underpin skills utilisation in their workplaces. From its Scottish case studies, SQW identified similar reasons for skills utilisation, for example, to enable companies to recruit and retain employees. It too identified a dual drive behind companies adopting skills utilisation practices: market forces, and the culture and values of senior managers. In both sets of case studies, leadership and management was identified as a critical success factor.

Table 3: The triggers and levers of skills utilisation

Triggers	Levers
Product market strategies	Leadership and management
Skills shortages/skills gaps	Supervisors
Staff retention	Organisational culture
Government regulation/exhortation	Employee motivation/trust/commitment
	Good communication

Source: Skills Australia (2012b).

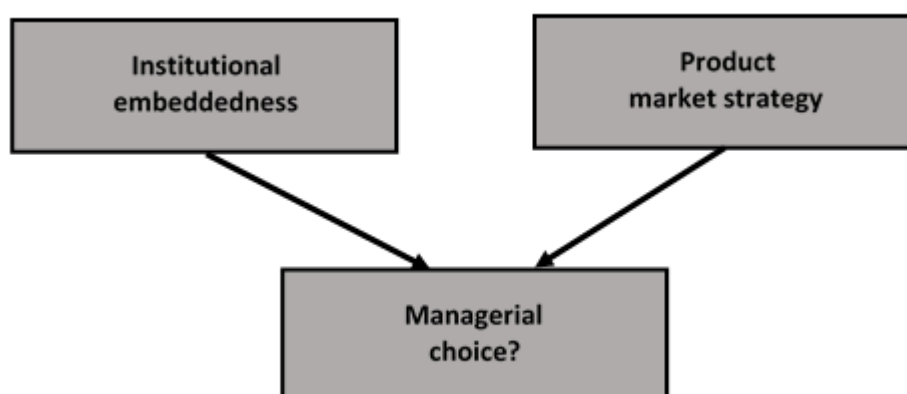
Knox and Warhurst (2018f) agree with Sung et al (2009) that managerial choice has been too readily overlooked in research of the link between product market strategies and skills. However, they also note that what underpins managerial choice also needs to be examined. Research reveals that managers are variously the initiators, implementers and mediators of both business and skills strategies. However, managers at different levels in companies, and in companies of different sizes, can have different capabilities, interests and incentives around these strategies and so their capacity and willingness to make particular choices can also vary (Teulings, 1986; Warhurst and Findlay, 2012).

Moreover, Knox and Warhurst suggest that the explanation as to why the product market-skills link holds for some employees and not others (as Sung and Ashton indicate) might rest not just with managerial choice but with occupational task demands. Their research of services in Australia, which extends by inference to manufacturing, reveals that the product market and skills linkage exists for some but not other occupations independent of firm, industry or sector. The key question is then which occupations matter, with the answer seemingly those occupations of strategic importance to firms; that is, those upon which their business strategy is built.

Summary

Institutionalist and product market theories have different emphases – one reads off skills use from companies' national institutional embeddedness, the other reads off skills use from companies' product market strategies (Figure 1). However, as Ashton et al (2017) note, both theories reach the same conclusion, that in company business strategies that involve pursuing higher-quality markets, employees use higher-level skills than in companies pursuing cost-based markets. What these theories indicate is that contextual factors such as country, sector and business strategies are important in understanding skills within companies. Ashton et al (2017) also note that both theories have been developed from research of manufacturing companies and that, in each case, empirical support for those theories is weaker in the services sector.

Figure 1: Main theoretical explanations for skills use in companies



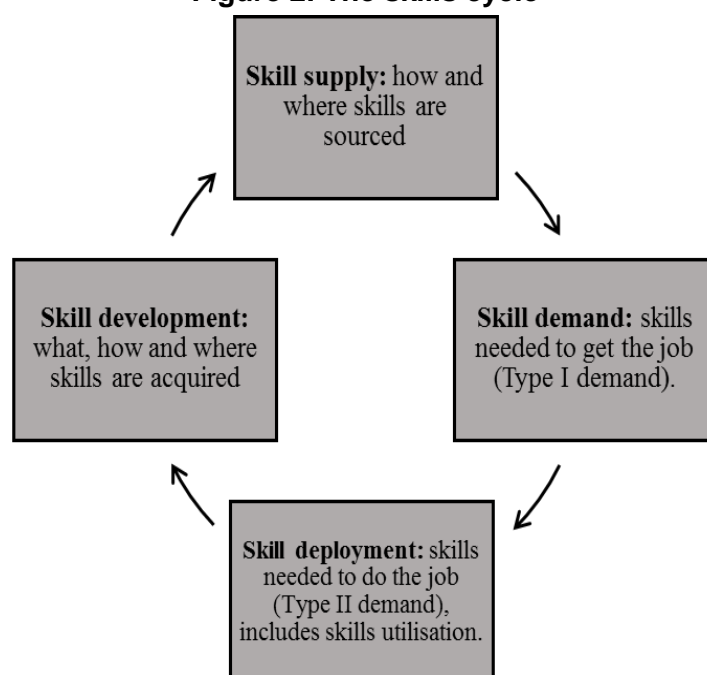
Source: Authors' own figure

In trying to account for variation, these theories have attempted to recognise, if not accommodate theoretically, the capacity for managerial choice within constraints. The third theory presented in Figure 1 centres on this choice. It provides strong indication that managerial choice is also a contributory factor in the adoption or otherwise of better skills utilisation within companies. Understanding why managers make these choices is an important question in investigating skills utilisation occurrence and practices.

How good are existing measures of skills in companies for assessing skills utilisation?

A helpful way of conceptually charting work-related skills is the skills cycle framework (James et al, 2013) in Figure 2. This framework distinguishes between aspects of skills development, supply, demand and deployment. Skills development covers what, how and where skills are acquired or formed, for example before or during employment.

Figure 2: The skills cycle

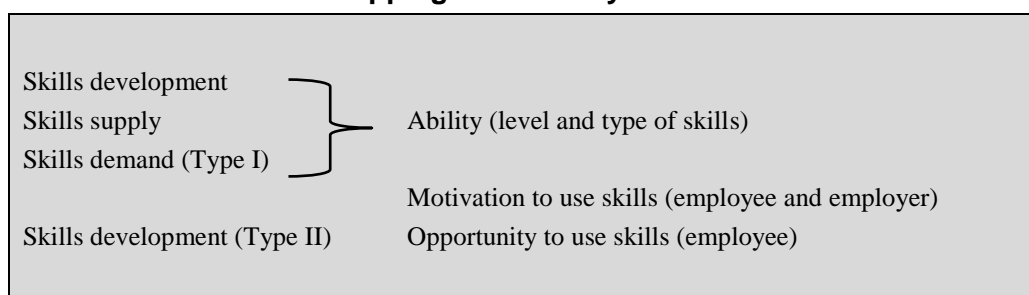


Source: Adapted from: James et al (2013)

Skills supply covers how and where employers source their skills, most obviously whether companies train or buy (for example, recruit) skills. The skills cycle disaggregates ‘demand’ into Type I demand, the skills needed to get jobs, and Type II demand, the skills needed to do jobs. Type II demand is now recast as ‘skills deployment’ and so includes skills utilisation. The skills cycle also appreciates that skills deployment in the job influences – or at least should influence – the skills needed to be developed, so that the cycle is dynamic.

By disentangling Type I and Type II demand, the skills cycle enables identification of whether these two distinct skills demands are matched by supply. It thus appreciates that applicants might have the skills to get the job but not the skills to do the job or, potentially, vice versa. The skills cycle can also be mapped onto the AMO framework, as Box 1 below shows.

Box 1: Mapping the skills cycle onto the AMO framework



Source: Authors' own mapping

Applying the skills cycle framework to skills surveys

The skills cycle is therefore a useful framework to analyse aspects of skills covered in skills surveys, identifying which part or parts of the skills cycle are emphasised within these surveys, including skills utilisation. To this end, 26 surveys were reviewed. These surveys either focus exclusively on skills or were broader surveys that included specific sections on skills. They encompass national and international surveys, including the ECS, and variously target employers, employees and employee representatives as respondents. The surveys are listed in Annex A, split by their target response group. The remainder of this analysis focuses mainly on the employer surveys but refers to employee surveys where germane.

The analysis of the survey questions uses the four aspects of the skills cycle as an analytical lens, separating out any questions specifically dedicated to skills utilisation within skills deployment. The analysis also examined whether the surveys asked questions about what type of skills are needed to do the work, resulting in six skill-related themes in total.

Table 4 presents a summary of existing questions in ECS 2013 as they map onto the skills cycle framework and whether they cover skills utilisation and type of skills specifically.

Table 4: Existing questions by skills aspect in ECS 2013

Skills development	Skills supply	Skills demand (Type I: to get the job)	Skills deployment (Type II: to do the job)	Skills utilisation	Type of skills
<p>Various measures related to HPWS (for example, JIT, teams, etc.)</p> <p>Extent / availability of training and objectives of training</p> <p>Employee involvement</p> <p>Performance-related pay and other incentives</p>	<p>Number / percentage of employees with a university degree (higher-level skills stock proxy)</p> <p>Whether outsourcing certain aspects of work (looking for skills externally)</p> <p>HRM recruitment strategy – whether look internally first; whether aim to hire employees for the long-term; contract renewal</p> <p>Problems with recruitment, including problems finding employees with required skills; employee retention; motivation</p>	NA	<p>Initial learning time:</p> <p>Percentage of employees work in jobs which require at least one year of on the job learning in order for the person to become proficient in their task</p> <p>Extent of task rotation – can be indicative of task variety / using different skills BUT employees who are doing jobs that require very high / specialised skills may not be able to rotate</p>	No direct measure	NA

Source: Authors' own analysis

ECS 2013 included a variety of questions related to skills development, particularly around training, skills supply and skills needed to do the job (Type II demand). The main omissions were around Type I demand for skills. The ECS also lacked measures of skills utilisation specifically as well as measures about the use of specific skills.

Across all 26 surveys, 471 questions were identified in total that were related to the six themes. Of those questions, 256 were in the employer questionnaires (54%). The summary of the findings for the employer surveys only is provided in Table 5. The table lists the employer surveys that contained any questions about one of the six themes based on the skills cycle. It is also colour-coded to show the prevalence of questions on a particular theme, calculated as a percentage of all the employer survey questions analysed: the higher the percentage, the darker the shading. It should be noted that the percentages serve as a rough indicator of the distribution of skill-related questions among the questionnaires. For example, questions related to training but less directly to skills development, and questions related to career development but not explicitly to skills, were not included.

Table 5: Pattern of questions by skills aspect in other surveys

Skills development	Skills supply	Skills demand (Type I: to get job)	Skills deployment (Type II: to do job)	Skills utilisation	Type of skill
BPSS	BPSS	BPSS	BPSS	BPSS	BPSS
Estate MAN	Estate MAN	Estate MAN	Estate MAN	Estate MAN	Estate MAN
ECS 2013 MAN	ECS 2013 MAN	MIT	ECS 2013 MAN	UKCES ESS	ECS 2013 MAN
Meadow MAN	MIT		MIT		MIT
MIT	WERS MAN		UKCES ESS		UKCES ESS
MOPS			WERS MAN		WERS MAN
REPOSE MAN					
UKCES ESS					
WERS MAN					
Percentage of questions in each theme of all the questions analysed among employer surveys					
51%	18%	5%	8%	7%	11%

Source: Authors' calculations.

Skills development

All of the employer surveys contained at least some questions on training, for example type of training, duration, content, usefulness for the job role etc. From the perspective of identifying company strategies that enable effective skills utilisation, the most relevant questions were whether there are opportunities for employees to develop their skills and whether employees are encouraged to develop their skills. Questions related to training and to aspects of HPWS that monitor employee performance were included in the ECS 2013 questionnaire and several other surveys (for example, what percentage of employees received on-the-job training; questions about task rotation). Other surveys also included questions on managerial orientations (for example, BPSS) and whether the amount of training provided has changed (for example, MIT Manufacturing Survey).

Skills supply

Questions about skills supply occurred in the surveys less frequently than skills development. When questions were included, they tended to cover both whether companies buy skills through new employee recruitment or train existing employees' skills. Some employer surveys, for example the MIT Manufacturing Survey, asked whether, to fill 'higher core positions', managers had a preference for external candidates, internal promotions or neither.

Another aspect to skills supply is gauging the skills level of existing employees. Such questions typically asked what proportion of employees have a particular qualification (for example, degree). However, as discussed earlier, qualification-based questions do not directly measure skills level.

Skills demand (Type I: skills to get the job)

Most of the questions relating to Type I employer demand for skills to get the job were found in employee questionnaires. However, it is possible to ask questions about the overall employee skills level at point of hire, as was done in the MIT Manufacturing Survey: 'What percentage of [core employees hired in the last two years] was already at the skill level you require, and what percentage required training to attain this skill level?'

Skills deployment (Type II demand: skills to do the job)

Questions about skills deployment were typically related to job complexity. Questions, usually in employee surveys, asked how long it took to learn to do the job (the implication being that a longer learning time relates to greater job complexity). Employer surveys tended to ask a related question about whether (or what proportion of) staff were able to cope with their work duties.

Some of these questions overlap with skills utilisation, depending on how they are asked. For example, whether there are staffs that are not ‘fully proficient’ and whether steps can be taken to improve their skills can be viewed as a question about the skills needed to do the job, and as a skills utilisation matching question.

Skills utilisation

Matching-based measures of skills utilisation were most frequently used in employee surveys (that is, self-perceived matching measure). This measure was typically asked using questions such as: ‘In your work, can you fully employ your skills? Always; Often; Sometimes; Never’ (Réponse employee survey) or ‘How well do the work skills you personally have match the skills you need to do your present job? My own skills are: Much higher; A bit higher; About the same; A bit lower; Much lower’ (WERS⁴ employee survey).

The advantage of asking employees to self-report their perceived skills utilisation is that it is often possible to combine answers with other individual-level variables such as job satisfaction, occupation, education level etc. to see which types of employees consider themselves to be using their skills. However, the drawback is that this approach suffers from the usual problems associated with self-reporting. More fundamentally, it cannot be implemented in an employer survey.

Some employer surveys also measured the ‘skills gap’, for example UKCES⁵ and BPSS⁶. They tended to ask questions about how many staff there are who have qualifications higher than required for the job, and how many ‘of these [staff] also have skills that are more advanced than required for their current job role?’ (UKCES employer skills survey). In the UKCES case, this question was followed by further questions about the reasons why staff may be employed in jobs for which the skills (and qualifications) they possess are greater than those required for the job. Other questions asked whether employers can take steps to improve employee skills where these skills were perceived to be insufficient.

While this approach is feasible to implement in an employer skills survey, the main limitation is that it either asks about employees in general or about a more particular group of employees (for example, most numerous occupational group or most important (core) group). Whether a group of employees is specified or not depends on the overall aims of the survey: if the emphasis is on identifying where skills utilisation occurs to a greater or lesser extent, it may be appropriate to consider a particular group. However, if the aim is to treat employees in general as a resource, and to identify whether that resource is fully utilised, different groups of employees become less important analytically.

Specific skills

A number of employer surveys included questions about using specific skills (for example, numeracy, literacy, ICT etc.). Including such questions does not necessarily contribute to furthering understanding of whether skills utilisation is intentionally pursued and how it can be improved. The main problem is that skills such as ‘numeracy’ mean different things in different contexts and different managers may interpret and answer this question in different ways, which could complicate comparative analysis. One way of specifying what is meant by such skills is to include illustrative examples or vignettes (as the PIAAC survey does). However, doing so may result in an overly narrow definition and may also lengthen the questionnaire.

The usefulness of including such questions depends on whether it is important to know which specific skills are under-utilised in a company. However, it may be the case that specific skills utilisation differs between different employee groups. If the focus of the survey is skills utilisation across

⁴ WERS: Workplace Employment Relations Study

⁵ UKCES: UK Commission for Employment and Skills

⁶ BPSS: Baseline Personnel Security Development

employees in general and, given that the survey is limited in terms of length, it might not be necessary to include questions about use of specific skills.

Evaluation

Overall, using the skills cycle framework shows that most employer surveys include questions on skills development and skills supply but few include questions on employer demand for skills (both Type I and II) and, within Type II, skills utilisation, as Tables 4 and 5 above show.

Similarly, as regards the matching approach to skills utilisation, questions about training and source of skills were relatively well covered. However, employer demand (both types) as well as direct questions about skills utilisation, occurred much less frequently. Three issues are evident. First, skills utilisation questions were more frequently asked in employee surveys, although several employer surveys asked about matching in general (for example, UKCES, BPSS). Second, unless a survey is specifically designed to examine skills strategies, details such as employer demand tend to be overlooked. Third, even surveys that included questions on both types of employer demand referred to ‘qualifications’ needed to do or to get the job. As discussed earlier, while it may be easier to carry out international comparisons using qualification levels across different countries, a focus on qualifications can overlook the actual skills involved.

In terms of the enablers approach and the AMO framework in particular, the analysis reveals that ability (stock and source of skills) and opportunity (to use skills) are relatively well-covered but the motivation to use skills is less well-covered. There are some questions on performance-related pay, extent of job autonomy etc., which feature as HPWS practices. Such questions indirectly measure employee motivation. However, motivation-orientated questions tend to focus on employees’ motivation to deploy their efforts through skills use. What is missing are any questions that measure managers’ motivation to either develop or deploy the skills of their workforce. The exception is the BPSS. It asks, for example: ‘Do the following statements describe the prevalent characteristics of your organisation? We ensure that employees grow in their jobs by learning new skills and developing themselves’. Given the discussion above about the drivers of skills utilisation, this omission across the majority of employer surveys examined here is significant.

Which approach of the two (matching or enablers) to take when measuring skills utilisation depends on the purpose for including questions on skills utilisation within the ECS – an issue further discussed in the section below.

To measure skills utilisation in the ECS 2019, we suggest consideration of two approaches: the matching approach and the enablers approach (the latter informed by AMO). Each approach has strengths and weaknesses, and which is adopted for inclusion in the ECS 2019 should be informed by both practical and policy considerations.

This section outlines the two approaches as potential measures for the ECS, indicating aspects for each approach where questions are needed. Actual questions are suggested in Annex B. Some of these questions already exist within ECS 2013 and others exist in other surveys; in both cases they are therefore already tested. Some new questions are also required, particularly if the AMO framework is to be developed. Note that the two approaches are not exclusive, indeed there are overlapping questions, and both could be pursued in the next ECS. There is also a need for the ECS 2019 to maintain a number of important contextual questions.

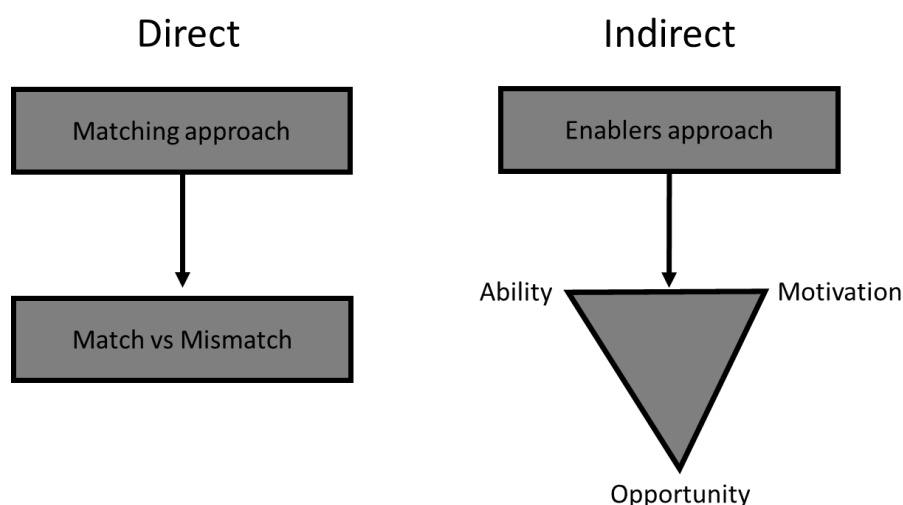
Operationalising the two approaches

As Figure 3 shows, the matching approach is direct, aiming to identify the extent of skills utilisation by providing measurement of skills match and mismatch amongst a company’s workforce. It leaves open to empirical application whether skills or qualification is the respondents’ unit of assessment. Question wording could indicate either or both.

The enablers approach, using the AMO framework, is an indirect measure, aiming to capture information about that human resource management factors within companies that enable skills

utilisation to occur. Again, questions within it that focus directly on skills can be phrased as either skills or qualifications or both.

Figure 3: Operationalising the two approaches to skills utilisation



Source: Authors' own figure

Within the ECS 2013, the term 'skills' is used but not defined and only appears once and in relation to options pertaining to training objectives.⁷ Most surveys refer to qualifications when examining skills. Other surveys, such as PIAAC, characterise skills through vignettes, as we noted above. The MIT Manufacturing Survey does not define 'skills' for respondents. Instead it assumes that employer respondents are best qualified to discern what skills means in their particular organisational context. For this US survey at least, this approach appears to work, according to those researchers involved in it.

The next section indicates the areas in which questions are needed for both the matching and enablers approaches. The suggested questions within each area are listed in Annex B.

The matching approach

This section highlights the areas in which questions are needed to assess skills matching in the ECS 2019, and suggests which questions could be included to capture skills utilisation through the matching approach. Possible specific questions to support the matching approach are listed in Table 7 in Annex B.

First, a question should be included to gauge the extent to which skills mis/match occurs within the company. The rationale for including such a question is to assess whether there are any current skill use gaps. Several employer surveys include variations of such a question (Annex B).

A possible disadvantage of matching questions is that they may reflect managers' subjective view of their satisfaction as to whether their skills demands have been met rather than whether they have been objectively met.

Another way of looking at skills utilisation is to capture the job requirements in terms of skills (or job complexity), which would reflect skills demands rather than the perceived skills gaps. To consider the

⁷ The question is about whether the options '[p]rovide the skills needed for employees to take on a different job position'.

extent to which skills are part of the job requirement, and following Russo (2016), questions could ask about:

- the expected length of time in which employees would become competent at their job;
- whether jobs are deliberately designed to make use of employees' skills;
- the expected standard of employee performance.

Examples of these questions from other surveys are in Table 7 in Annex B. However, questions that relate to managers' expectations of employee performance may only reflect the strategies and frameworks which are in place to enable skills utilisation, and not the extent of skills utilisation that takes place at their establishment. Thus, it would still be useful to also include a skills mismatch question in order to gauge the extent to which skills utilisation occurs.

Given the constraints of the ECS questionnaire length, looking at existing surveys which ask questions about both skills mismatch and job requirements in terms of skills (for example, UKCES, ESS) and at the extent of the correlation between these questions could be useful. A skills mismatch as perceived by management in an establishment where job requirements involve skills use and skills development strategies could indicate a failure of these strategies to translate into practice.

Another issue to consider is whether occupation should be specified in the ECS questions on skills utilisation. In employee-focused surveys, which tend to ask respondents about their self-perceived fit with the job, the occupation of the employee is often known. In employer surveys, it is possible to ask about skills mismatch across all employees in the company without specifying their occupation(s), and also to focus on a particular group of employees (for example, most numerous occupational group, as is the case in the WERS surveys, or the 'core' group, as is the case in the MIT Manufacturing survey). The ECS 2019 may choose to focus on a particular employee group or not, however, given that past ECS questionnaires did not specify an employee group, doing so may diverge from the expected question formats.

The enablers approach

This section takes each AMO component in turn and suggests potential questions to measure skills utilisation. Because AMO overlaps with the matching approach, as shown in Box 1, some of the discussion from the section above is also pertinent to the discussion here. Possible specific questions to support the enablers approach are listed in Table 8 in Annex B.

Ability refers to having an 'appropriately skilled workforce' through the buying or training of skills (Table 2). The ECS is strong on these aspects through its set of questions on training and a question on recruitment policy. The ECS could include an additional question about whether recently hired employees have the skills to do the job at the point of hire (Annex B). The questions on skills matching, discussed in the section above, are also pertinent to the establishment's ability to make use of skills.

Motivation relates to both managers and employees. Typically, it is only the motivation of employees that is examined in surveys, aligning with the three motivators listed in Table 2: extrinsic/financial, intrinsic (non-financial) and organisational trust.

While self-reported measures of employee motivation by the employees themselves may be the best source of data on employee motivation, it is possible to use existing ECS questions to proxy intrinsic and extrinsic employee motivation. Examples of these questions are given in Annex B. Similarly, the ECS already has some questions that could be used as a proxy for organisational trust.

Whilst measures of managers' motivation are largely absent from the surveys analysed for this paper, managers' motivation to encourage employees' skills use is important and may link, for example, to managers' own values and interests or the business strategy of their company, as the literature suggests. Given the importance of managerial choice, there is no necessary reason why a more developed AMO framework cannot include managers' motivations. A set of questions to gauge employer values about employee skills could be included. The best examples come from the BPSS battery of management values questions and include statements such as endeavouring to ensure that employees grow their jobs by learning new skills (Table 8 in Annex B). Incorporating some of these items in the ECS survey can capture managerial choice over skills utilisation.

Opportunity refers to employees having responsibility and authority to problem solve; autonomy and control over decisions; and a capacity to coordinate and communicate their decisions to the wider organisation (Table 2). Aspects related to autonomy and communication are included in ECS 2013, and there are plans to develop some of these questions further. However, there are almost no questions relating to employees' problem-solving responsibilities in ECS 2013.

Problem solving

Among the surveys analysed, the majority of questions that asked about problem solving were employee surveys (for example, PIAAC). The ECS does not include any questions about problem solving and neither do most of the other surveys. Possible questions should measure the extent of employees engaging in problem solving in an establishment (Annex B). A short description (vignette, as in the PIAAC survey) of complex problem-solving in the question should be included to set an external anchor and improve comparability of results.

Given that few employer surveys focus on employee problem-solving, an alternative course of action could be to modify questions targeted at employees from employee surveys and to rework them for inclusion in the ECS employer survey.

Autonomy

Job autonomy refers to the extent to which employees have control over aspects of their job. It can be measured by asking what exactly employees have control over, whether they can control how they do their job, and when they do their job. Job autonomy *in decision making* in the AMO approach asks to what extent employees have a say about what happens on the job, and to what extent employees can participate in making decisions that affect the way they work (Appelbaum et al, 2000).

The ECS 2013 already has questions about discretion over what time employees can start or finish work, and who decides how the main tasks that are done as part of everyday work are planned and executed (Table 8 in Annex B). It may be sufficient to leave these ECS questions as they are or to replace them with a question on autonomous (self-managed) teams. If space considerations are not an issue, it may be useful to reconceptualise autonomy as autonomy in decision making and focus on the extent to which employees can participate in decision making that then affects their work. Questions on autonomous teams would achieve this aim to an extent but autonomous teams may be under-represented in small firms where workers nonetheless experience a high degree of autonomy over decision making.

Communication

This aspect relates to employees' capacity to coordinate and communicate their decisions to the wider organisation. ECS 2013 has a question that relates to this aspect, asking about employee involvement (Table 8 in Annex B).

However, this question and others like it tend to focus more on the existence of communication practices within a company and less on how and to what extent employees are involved in these practices. For example, an establishment that has regular meetings between employees and managers may only use these meetings for top-down information dissemination rather than involve workers in decision making. Other questions to focus on involvement in a more meaningful way could be included, either by looking at whether staff actually make any suggestions or whether anything has changed as a result of any matters arising out of such communication practices (Table 8, Annex B).

Contextual factors

Next to capturing skills utilisation through either, the matching approach, the enablers approach or a combination of the two, having contextual information about companies is important. The theoretical debate about company business strategies – whether driven mainly by national institutional embeddedness or product market positioning – indicate that any understanding of skills to be derived through the ECS also requires contextual information. Information is needed, most obviously, about respondent company country location, size and sector. These questions already exist within the existing ECS (Table 9 in Annex B).

However, the questions in the ECS about product market strategy could be further developed and related to measures of skills utilisation. The current question in the ECS does not directly ask about the company's product market strategy or about the type of product or service produced. The BPSS provides a better example, specifically asking whether the establishment competes on premium quality and/or a complex product mix (Annex B). If product market strategy needs to be related to competitive strategy (as discussion above), the BPSS and WERS have questions which could be used in the ECS 2019. The BPSS questions focus on the market in which the establishment competes, whereas the WERS questions emphasise the demand for the product/service.

If possible, it may be helpful to consider the degree of choice managers have over their company's competitive and product market strategies, and whether this information can be reliably gained from the target respondents (as discussion below).

Other considerations

The two main other considerations about which of the two approaches is to be pursued or indeed whether both approaches are to be pursued are practical and policy-centred.

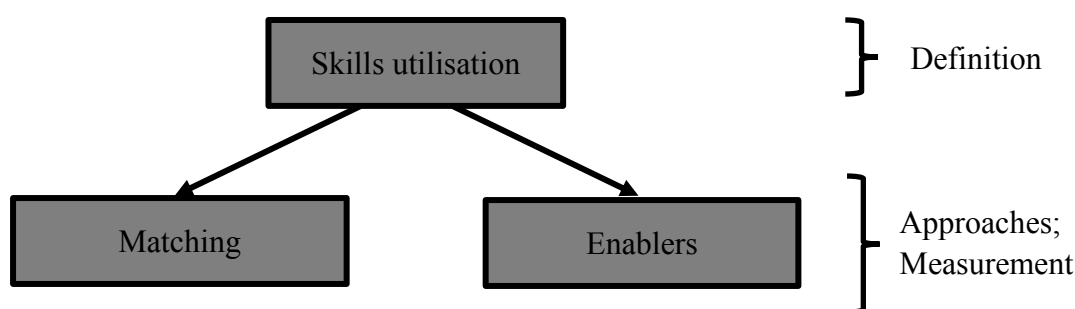
Practically, there are a number of issues. First, the main ECS has employer respondents, typically human resource managers. These respondents may only have limited knowledge about business strategies and how, if at all, those strategies are intended to relate to skills. How to best capture these responses to provide meaningful information might be a challenge. Also likely to be a challenge will be the respondents' capacity to provide reliable information about employee motivations and opportunities. Some data triangulation could be realised by including some questions in the employee representative survey, but employer and employee response would need to be matched. Second, given that the ECS 2019 should take around 30 minutes to complete with respondents, there is a limit to the number of (new) questions to be included. The matching approach is the shortest approach in terms of the number of questions needed to be asked and therefore quickest to be administered timewise. More questions will be needed with the enablers approach, and so it is likely to take longer for respondents to answer.

Which approach is adopted though must be determined not just by practical considerations but also by the policy purpose in including a section of skills utilisation within the ECS 2019. In this respect, the matching approach provides information on the extent of skills utilisation currently within companies – in other words, a snapshot of how *effective* companies are currently in using the skills of their employees. The enablers approach provides indication of areas of strength and weakness in terms of the factors that enable skills utilisation and so potential points of intervention that might help improve skills utilisation within companies – in other words how *better* skills utilisation might be achieved. The approach to be pursued therefore depends on the underlying policy aim of the ECS and what Cedefop and Eurofound hope to achieve with the inclusion of skills utilisation in the ECS 2019.

Conclusion

This background paper is intended to inform the capture of skills utilisation information in the ECS 2019. Understanding skills utilisation is important in the context of governments needing to develop new policies that encompass both the supply of and demand for skills. Focused on the skills needed to do the job, skills utilisation is a key feature of this demand. The conceptual framework for addressing the inclusion of skills utilisation in the ECS 2019 is presented in Figure 4.

Figure 4: From definition to approaches with measures of skill utilisation



Source: Authors' own figure

Figure 4 shows the two conceptual approaches that can be operationalised to provide measures of skills utilisation. The matching approach assists to measure skills match or mismatch in a company; when a matching occurs effective skills utilisation is achieved. Bridging the gap is potentially enabled by the AMO (Ability-Motivation-Opportunity) framework (Appelbaum et al, 2000), which helps identify the human resource management practices through which skills utilisation occurs and might be improved (Skills Australia, 2012b; SQW, 2010). Therefore, the enablers approach uses the AMO model to measure skills utilisation and capture work practices. The drivers of these practices have been explored in the literature with some success but it still remains to be seen how and why managers make choices about certain human resources practices.

Using the skills cycle framework (James et al, 2013), helps to analyse the various aspects of skills within existing relevant surveys, including, separately, the ECS 2013. The ECS has questions related to skills development and skills supply. There are questions on skills deployment (Type II demand) but none specifically about skills utilisation. It also lacks measures of the skills needed to get the job (Type I demand) and measures about the use of specific skills. Of the other employer surveys, most include questions on skills development and skills supply but few include questions on employer demand, either Type I or II, and, within Type II (skills deployment), skills utilisation.

The reviews of the main conceptual and theoretical approaches to skills and skills strategies and existing skills related surveys, including ECS 2013, suggest that either the matching and/or enablers approach can be adopted by the ECS 2019. If the matching approach is pursued, the ECS will need to aim to measure the extent of skills mismatch at company level. If the enablers approach is pursued, questions will need to cover the AMO framework components. In both cases already tested questions from existing surveys can be used but new ones will need to be added. In addition, whichever approach is adopted will still require maintenance of a number of contextualising questions within the ECS. The determining issue as to which approach is to be adopted has to relate to the policy intent behind Cedefop and Eurofound wanting to include skills utilisation in the ECS.

References

- Allen, M. (2004), 'The varieties of capitalism paradigm: not enough variety?', *Socio-Economic Review*, Vol. 2, No. 1, pp. 87–108.
- Allen, J. and van der Velden, R.K.W. (2011), *The Flexible Professional in the Knowledge Society*, Springer, New York.
- Appelbaum, E., Bailey, T., Berg, P. and Kalleberg, A.L. (2000), *Manufacturing advantage*, Cornell University Press, Ithaca.
- Ashton, D. and Sung, J. (2011), *Product Market Strategies and Skills Utilisation*. Skills Development Scotland, Glasgow.
- Ashton, D. Lloyd, C. and Warhurst, C. (2017), 'Business Strategies and Skills' in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds), *Oxford Handbook of Skills and Training*, Oxford University Press, Oxford.
- Attewell, P. (1990), 'What is skill?', *Work and occupations*, Vol. 17, No. 4: 422-448.
- Becker, B.E. and Huselid, M.A., (1998), 'High performance work systems and firm performance: a synthesis of research and managerial implications', *Research in Personnel and Human Resource Management*, Vol. 16, pp. 53-101.
- Belt, V., and Giles, L. (2009), *High performance working: a synthesis of key literature*. UK Commission for Employment and Skills (UKCES), Wath-upon-Deane.
- Bernhardt, A., Dresser, L. and Hatton, E. (2003) 'The coffee pot wars: unions and firm restructuring in the hotel industry', in E. Appelbaum, A. Bernhardt and R.J Murnane (eds), *Low Wage America*, Russell Sage Foundation, New York.
- Bosch, G. (2017), 'Different national skill systems', in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds), *Oxford Handbook of Skills and Training*, Oxford University Press, Oxford.
- Boxall, P. and Purcell, J. (2011), *Strategy and human resource management*, Palgrave Macmillan, Basingstoke.
- Brockmann, M., Clarke, L., and Winch, C. (2011), *Knowledge, skills and competence in the European labour market*, Routledge, Abingdon.
- Cedefop (2017), Skills panorama glossary, <http://skilspanorama.cedefop.europa.eu/en>.
- Cedefop (2010), *The skill matching challenge: analysing skill mismatch and policy implications*, Office for Official Publications of the European Communities, Luxembourg.
- Clark, J. (1995), *Managing Innovation and Change*, Sage, London.
- Crouch, C. (2009), 'Typologies of capitalism', in B. Hanké (ed.), *Debating Varieties of Capitalism*, Oxford University Press, Oxford.
- Delery, J. and Doty, H. (1996), 'Modes of theorising in strategic human resource management: tests of universalistic, contingency and configurational performance predictions', *Academy of management Journal*, Vol. 39, No. 4, pp. 802-35.
- Desjardins, R. and Rubenson, K. (2011), 'An analysis of skill mismatch using direct measures of skills', *OECD Education Working Papers*, No. 63, OECD, Paris.
- DiMaggio, P.J. (1986), 'Structural Analysis of Organisational Fields: A Blockmodel Approach', *Research in Organisational Behaviour*, Vol. 8, pp. 335-370.
- DiMaggio, P.J. (1990), 'Cultural Aspects of Economic Action and Organisation', in R. Friedland and A.F. Robertson (eds), *Beyond the Marketplace*, Aldine de Gruyter, New York.
- European Commission (2012), *New skills and jobs in Europe: pathways towards full employment*, European Commission, Brussels.
- Eichhorst, W. and Marx, P. (2009), 'From the dual apprenticeship system to a dual labour market? The German high-skill equilibrium and the service economy', *Discussion Paper*, No. 4220, IZA, Berlin.
- Elias, P. and Purcell, K. (2004), 'Is mass higher education working? Evidence from the labour market experiences of recent graduates', *National Institute Economic Review*, Vol. 190, No. 1, pp. 60-74.

- Estevez-Abe, M., Iverson, T. and Soskice, D. (2001), 'Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State', in P.A. Hall and D. Soskice (eds) *Varieties of Capitalism*, Oxford University Press, Oxford.
- Felstead, A., Gallie, D. and Green, F. (2017), 'Measuring Skills Stock, Job Skills and Skills Mismatch', in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds), *Oxford Handbook of Skills and Training*, Oxford University Press, Oxford.
- Felstead, A., Gallie, D., Green, F. and Zhou, Y. (2007), *Skills at Work, 1986 to 2006*, ESRC Centre on Skills, Knowledge and Organisational Performance (SKOPE), Oxford and Warwick.
- Gambin, L., Hogarth, T., Murphy, L., Spreadbury, K., Warhurst, C. and Winterbotham, M. (2016), 'Research to understand the extent, nature and impact of skills mismatches in the economy', *BIS Research Paper*, No. 265, BIS, London.
- Godard, J. (2001), 'Beyond the high-performance paradigm? An analysis of variation in Canadian managerial perceptions of reform programme effectiveness', *British Journal of Industrial Relations*, Vol. 39, No. 1, pp. 25-52.
- Granovetter, M. (1985), 'Economic Action and Social Structure: The Problem of Embeddedness', *American Journal of Sociology*, Vol. 91, No. 3, pp. 481-510.
- Green, F. (2011), 'What is skill? An interdisciplinary synthesis', *LLAKES Research Paper 20*, Institute of Education, University of London.
- Green, F. and Zhu, Y. (2010), 'Overqualification, job dissatisfaction, and increasing dispersion in the returns to graduate education', *Oxford Economic Papers*, Oxford University Press, Oxford.
- Grugulis, I. Warhurst, C. and Keep, E. (2004), 'What's Happening to Skill?', in C. Warhurst, E. Keep and I. Grugulis (eds), *The Skills That Matter*, Palgrave, London.
- Hall, P. A. and Soskice, D. (eds) (2001), *Varieties of Capitalism*, Oxford University Press, Oxford.
- James, S., Warhurst, C., Tholen, G. and Commander, J. (2013), 'What We Know and What We Need to Know About Graduate Skills', *Work, Employment and Society*, Vol. 27, No. 6, pp.: 952-963.
- Keep, E. and Mayhew, K. (1999), 'The Assessment: Knowledge, Skills and Competitiveness', *Oxford Review of Economic Performance*, Vol. 15, No. 1, pp. 1-15.
- Kenworthy, L. (2009), 'Institutional coherence and macroeconomic performance', in B. Hanké (ed.), *Debating Varieties of Capitalism*, Oxford University Press, Oxford.
- Knox, A. and Warhurst, C. (2018), 'Occupations, the missing link?: A new theoretical and methodological approach to product markets, skill and pay', *Work, Employment and Society*, Vol. 32, No. 1, pp. 150-186.
- Lafer, G. (2004), 'What is "skill"? Training for discipline in the low-wage labour market', in C. Warhurst, E. Keep and I. Grugulis (eds), *The Skills That Matter*, Palgrave, London.
- Livingstone, D.W. (2017), 'Skill Under-utilization', in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds), *Oxford Handbook of Skills and Training*, Oxford University Press, Oxford.
- Lloyd, C. (2005), 'Competitive strategy and skill in the fitness industry', *Human Resource Management Journal*, Vol. 15, No. 2, pp. 15-34.
- Lloyd, C. and Payne, J. (2004), 'The political economy of skill: a theoretical approach to developing a high skills strategy in the UK', in C. Warhurst, E. Keep and I. Grugulis (eds), *The Skills That Matter*, Palgrave, London.
- Lloyd, C, Warhurst, C and Dutton, E (2013), 'The weakest link? Product market strategies, skill and pay in the hotel industry', *Work, Employment and Society*, Vol. 27, No. 2, pp. 254-271.
- Luchinskaya, D. (2016), *It's not already laid out for you in a small company: UK graduates' knowledge and skills utilisation in small and large businesses*, PhD thesis, University of Warwick, Warwick.
- Mason, G. (2004), 'Enterprise Product Strategies and Employer Demand for Skills in Britain: Evidence from the Employers Skills Survey', *SKOPE Research Paper*, No. 50, Universities of Oxford and Warwick, Oxford and Warwick.

- Mason, G., Wagner, K., Finegold, D. and Keltner, B. (2000), 'The "IT productivity paradox" revisited: International comparisons of information technology, work organisation and productivity in service industries', *Quarterly Journal of Economic Research*, Vol. 4, No. 4, pp. 618-629.
- Maurice, M., Sorge, A. and Warner, M. (1980), 'Societal Differences in Organising Manufacturing Units', *Organisation Studies*, Vol. 1, No. 1, pp. 63-91.
- Mournier, A. (2001), *The three logics of skill in French literature*, BVET, Sydney.
- OECD (2010), *Putting in Place Jobs That Last*, OECD, Paris.
- OECD (2011), *Towards and OECD Skills Strategy*, OECD, Paris.
- OECD (2017), *Better use of skills in the workplace*, OECD, Paris.
- Okay-Sommerville, B. and Scholarios, D. (2013), 'Shades of grey: Understanding job quality in emerging graduate occupations', *Human Relations*, Vol. 66, No. 4, pp. 555-585.
- Osterman, P. (1994), 'How Common is Workplace Transformation and Who Adopts it?', *Industrial and Labour Relations Review*, Vol. 47, No. 2, pp. 173-188.
- Payne, J. (2013), 'Measure for measure: towards a measurement and evaluation framework for skills utilisation policy in the UK.' *Journal of Education and Work*, Vol. 26, No. 2, pp. 143-161.
- Porter, M. (1980), *Competitive Strategy*, Free Press, New York.
- Purcell, K. and P. Elias, P. (2016), 'Graduates and graduate jobs: what's happening in the UK Labour market?', *Futuretrack Working Paper*, No. 7, Institute for Employment Research, University of Warwick, Warwick.
- Rothschild, M. and Stiglitz, J.E. (1976), 'Equilibrium in competitive insurance markets: An essay in the economics of imperfect information', *The Quarterly Journal of Economics*, Vol. 90, No. 4, pp. 629-49.
- Russo, G. (2016), *'Job Design and Skill Developments in the Workplace'*, IZA Discussion Paper, No. 10207, IZA, Berlin.
- Sadun, R., Bloom, N. and van Reenen, J. (2017), 'Why do we undervalue competent management?', *Harvard Business Review*, September-October, pp. 120-127.
- Schuler, R. and Jackson, S. (1987), 'Linking competitive strategies and human resource management practices', *Academy of Management Executive*, Vol. 1, No. 3, pp. 207-19.
- Skills Australia (2012a), *Better use of skills, better outcomes: Australian case studies*, DEEWR, Canberra.
- Skills Australia (2012b), *Better use of skills, better outcomes: A research report on skills utilisation in Australia*, DEEWR, Canberra.
- Smith, C. and Meiksins, P. (1995), 'System, Society and Dominance Effects in Cross-National Organisational Analysis', *Work, Employment and Society*, Vol. 9, No. 2, pp. 241-267.
- SQW Consulting (2010), *Best strategies in skills utilisation*, Scottish Enterprise, Glasgow.
- Streeck, W. (1997), 'Beneficial constraints: on the economic limits of rational voluntarism', in J. Rogers Hollingsworth and R. Boyer (eds), *Contemporary Capitalism*, Cambridge University Press, Cambridge.
- Sung, J. and Ashton, D. (2005), *High Performance Work Practices: Linking Strategy and Skills to Performance Outcomes*, DTI/CIPD, London.
- Sung, J. and Ashton, D. (2015), *Skills in Business*, Sage, London.
- Sung, J. and Ashton, D. and Raddon, A. (2009), *Product Markets Strategies and Workforce Skills*, Futureskills Scotland, Glasgow.
- Teulings, A. (1986), 'Managerial Labour Processes in Organised Capitalism: The Power of Corporate Management and the Powerlessness of the Manager', in D. Knights and H. Willmott (eds), *Managing the Labour Process*, Gower, Aldershot.
- Thelen, K. (2004), *How institutions evolve*, Cambridge University Press, Cambridge.

Tholen, G. James Relly, S., Warhurst, C. and Commander, J. (2016), 'Higher education, graduate skills and the skills of graduates: the case of graduates as residential sales estate agents', *British Educational Research Journal*, Vol. 42, No. 3, pp. 508-523.

UKCES (2014), *UK Commission's Employer Skills Survey 2013: UK Results*, UKCES, Wath-upon-Deane.

Warhurst, C. (2014), *Skills for success: Getting better use of your employees' skills*, Service Skills Australia, Sydney.

Warhurst, C. and Thompson, P. (1999), 'Knowledge, Skills and Work in the Scottish Economy', in G. Hassan and C. Warhurst (eds), *A Different Future*, Big Issue/Centre for Scottish Public Policy, Glasgow.

Warhurst, C. and Findlay, P. (2012), 'More Effective Skills Utilisation: Shifting the Terrain of Skills Policy in Scotland', *SKOPE Research Paper*, No.107, Universities of Oxford and Cardiff, Oxford and Cardiff.

Warhurst, C., Tilly, C. and Gatta, M. (2017), 'A New Social Construction of Skill', in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds), *Oxford Handbook of Skills and Training*, Oxford University Press, Oxford.

Whitley, R. (1992), 'The Social Construction of Organisations and Markets: the Comparative Analysis of Business Recipes', in M. Reed and M. Hughes (eds), *Rethinking Organisation*, Sage, London.

Annex A

Table 6: List of the surveys analysed

Employers/ managers	<p>Business Performance and Skills Survey (BPSS) (Singapore)</p> <p>ECS - European Companies Survey 2013 management questionnaire (EU28 and other selected countries)</p> <p>Graduates on the Property Ladder – employer survey (UK)</p> <p>Meadow - Employer questionnaire (Multi-country)</p> <p>MIT Skills in Manufacturing Survey 2012 (US)</p> <p>MOPS - Management and Organizational Practices Survey – managers (US)</p> <p>REPONSE survey of employment relations and business negotiations - Management questionnaire (France)</p> <p>UKCES Employer Skills Survey (UK)</p> <p>WERS – Workplace employment relations survey – Management questionnaire (UK)</p>
Employees/ individuals	<p>BHPS Wave 18 (UK)</p> <p>BIBB/BAuA Labour Force Survey 2006 (Germany)</p> <p>European Working Conditions Survey (EWCS) 2010</p> <p>European Working Conditions Survey (EWCS) 2015</p> <p>Futuretrack – Graduate HE and employment experience (UK)</p> <p>Graduates on the Property Ladder – employee survey (UK)</p> <p>HILDA (Australia)</p> <p>Meadow - Employee survey questionnaire (Multi-country)</p> <p>PIAAC – Survey of Adult Skills – employees (OECD)</p> <p>REPONSE employee questionnaire (France)</p> <p>Skills and Employment Survey 2012 (UK)</p> <p>Skills Utilisation in Singapore 2011 (Singapore)</p> <p>Understanding Society (Wave 9 Mainstage questionnaire) (UK)</p> <p>WERS – Employee questionnaire (UK)</p>
Employee representatives	<p>ECS - European Companies Survey 2013 employee representative questionnaire (EU28 and other selected countries)</p> <p>REPONSE – Employee representative questionnaire (France)</p> <p>WERS – Worker representative questionnaire (UK)</p>

Annex B

Each table below lists possible questions – some from existing survey tools, others devised by the authors of this paper – that can be used to measure skills utilisation in the ECS 2019. In each table, the recommended questions are in darker shade. Lighter shaded questions represent additional options. Some questions are to be used in conjunction with other, unlisted, questions in the ECS. There are overlaps in questions for both approaches.

Table 7 List of suggested questions to support the matching approach to skills utilisation

Theme	Question and response scale	Source	Existing/New	Comment
Skills mismatch	In terms of the skills to do the job, do you think [your employees'] current skill levels are ...? [More advanced than needed; less advanced than needed; about right].	Estate agents graduate jobs employer survey	New	This is a matching question that focuses on skills in general.
Whether jobs are designed to make use of employees' skills	To what extent would you say that jobs at your plant are designed to make use of workers' skills? [Response category is a 5-point scale, where 5 means 'To a great extent' and 1 means 'Not at all'].	Russo (2016)	New	<p>This question taps into the relationship between job design that requires complex tasks and that therefore encourages skills development (Russo, 2016). This question may benefit from further description, examples, or other way of narrowing down the desired meaning of the question.</p> <p>This question can be used in conjunction with the skills mismatch question above, to explore the correlation between whether skills utilisation exists and whether jobs are designed to make use of employees' skills.</p>
Skills mismatch	Are there any occupations in which existing employees do not have the required qualification, experience and/or specialised skills to perform the job to acceptable or most efficient levels? Please name them.	Modified from Cedefop (2010)		<p>This question focuses on skills gaps only and identifies occupations where they occur.</p> <p>The modified version of this question separates out skills gaps and skills surpluses.</p>

Theme	Question and response scale	Source	Existing/New	Comment
	Are there any occupations in which existing employees possess more than the required qualifications, experience and/or specialised skills to perform the job to acceptable or most efficient levels? Please name them.			<p>This question can be used in conjunction with the question on skills mismatch to gauge whether the mismatch occurs owing to under-or over-utilisation of skills.</p> <p>Both questions can be shorted by simply referring to ‘skills’.</p>
Skills mismatch	<p>Of [the staff employed at your establishment], how many would you say have QUALIFICATIONS that are more advanced than required for their current job role?</p> <p>If number > 0, ask:</p> <p>And how many of these staff ALSO have SKILLS that are more advanced than required for their current job role? (INTERVIEWER: This should include staff who have BOTH relevant qualifications AND skills that are more advanced than required for their current job).</p>	UKCES Employer Skills Survey	New	<p>This question pair aims to distinguish between qualification mismatch and skills mismatch but the structure of the question is such that skills mismatch is conceptualised as a subsection of qualification mismatch.</p> <p>This question pair could be rephrased so that the first aspect is more clearly about qualifications to <i>get the job</i> and the second about the skills to <i>do the job</i>. Doing so would also clarify whether real or formal over-qualification is occurring if there is a mismatch.</p>
Length of time to become competent at the job	Approximately what percentage of employees work in jobs which require at least one year of on the job learning in order for the person to become proficient in his/her task? [X%]	ECS 2013	Existing	The theory implied by this question is that the longer it takes to learn to do the job, the higher the skills requirements of the job. But this type of question does not capture the extent to which employees use their skills in these jobs, or whether particular employees outperform expectations of how long it takes them to become fully operational.

Theme	Question and response scale	Source	Existing/New	Comment
				Indeed, discussion on the ECS 2019 indicates that this question does not give an indication of the absolute level of skills requirement. Establishments might recruit employees with high levels of education that still require extensive on-the-job learning to master their jobs.
Length of time to become competent at the job	Thinking about newly hired employees, over which time horizon your organization expects them to be fully operational? [Less than a week; 1-2 weeks; 3-4 weeks; 3 months; 6 months; 1 year].	Suggested by ECS team	New/replace existing	The rationale for including such a question over the previous ECS question is that it provides a wider range of response options. However, this question still does not capture the absolute skills requirements. In addition, an establishment which employs people in a range of functions may have different time horizons over which employees become proficient in their jobs depending on what they do. Focusing on the largest or the 'core' (see below) group of employees may narrow down this question.
Length of time to become competent at the job	After you hire a typical core employee how many weeks or months on average does it take a typical person to achieve an acceptable level of productivity?	MIT Manufacturing survey	New/replace existing	This is an open-ended question about how long it takes newly hired workers to reach an 'acceptable level of productivity'. Note that the question focuses on core employee hires rather than on employees in general.
Length of time to become competent at the job	Approximately what percentage of employees work in jobs which require: -Less than one month of on the job learning in order for the person to become proficient in his/her task? [X%] -At least one year of on the job learning in order for the person to become proficient in	Suggested by Warhurst and Luchinskaya	New/replace existing	This question wording (or a variation of it) would a) partly overcome the issue of which employees to focus on, as it would show the balance between complex and more routine jobs; and b) provide a validation check (percentages of employees should add up to 100% or less). This question does not address the issue of absolute job

Theme	Question and response scale	Source	Existing/New	Comment
	his/her task? [X%]			requirements. Perhaps one way of addressing this issue is to include external anchors, such as vignettes or examples of skills requirements in the question description (the PIAAC survey does this to an extent when asking about skills use).
Expected standard of employee performance	<p>Regarding the prevailing expectations about workers' level of performance at your establishment, would you say that (options may vary):</p> <ul style="list-style-type: none"> • Employees are expected to perform to the best of their skills and abilities • Employees ought to excel at what they do • Employees ought to work to a prescribed standard • Employees could do more with the skills and abilities 	BPSS survey	New	<p>Expected standard of employee performance</p> <p>The response category could be a Likert scale, with strongly agree/strongly disagree anchors, similar to that used in the BPSS survey.</p> <p>Management's expectations also relate to employer values and their role in shaping the company's skills utilisation strategy.</p>

Table 8: List of suggested questions to support the enablers approach to skills utilisation

Theme	Question and response scale	Source	Existing/New	Comment
Ability - skills mismatch	As in Table 7: In terms of the skills to do the job, do you think [your employees'] current skill levels are ...? [More advanced than needed; less advanced than needed; about right].	Estate agents graduate jobs employer survey	New	This is a matching question that focuses on skills in general. In the AMO approach it can be used as a measure of the extent of 'ability' in an establishment. It should also be used in conjunction with the question below.
Ability - source	If skills gaps exist in your organisation, what do you typically do in response? - train existing employees - hire new staff - outsource the task affected by the skills gaps to another organisation - other (please specify)	Recommended by Warhurst and Luchinskaya	New	<p>This suggested question seeks to find out whether, and if so how, skills gaps are closed. It indicates whether companies are concerned to ensure that their workforce has the ability required and if companies are concerned to ensure they attain it if it is lacking.</p> <p>This question could be correlated with the question on product market strategy (Table 9). It might be expected that an establishment with a complex product market strategy is more likely than an establishment with a simple product strategy to train existing staff in order to close skills gaps.</p>
Ability - supply	What percentage of [core employees hired in the last 2 years] was already at the skill level you require, and what percentage required training to attain this skill level? [Please give your best estimate for each category - either in % or in # of core employees.]	MIT Manufacturing survey	New	<p>This question could be used in addition to existing ECS questions if information about specific groups is required. It also addresses the hire or train skills dualism – though note we suggest going beyond this dualism in the question above.</p> <p>This question (or a variation) could be used in combination with the question about the time horizons required to become proficient at the job, to attempt to get to an absolute level of job requirement. For example, at point of hire a new employee could be at the required skills level, but could still take a year or</p>

Theme	Question and response scale	Source	Existing/New	Comment
				more to learn to do the job proficiently.
Ability - training	In the past 12 months, what percentage of employees received paid time-off from their normal duties to undertake training, either off or on your premises?	ECS 2013	Existing (to be replaced)	This question is set to be replaced in the ECS 2019. It may be possible to collapse formal and informal training into one question, and add another question looking at the type of training or who was able to attend the training. Two examples are given below.
Ability - training	In the past 12 months, what percentage of employees have received on the job training? [Note to interviewer: Training that takes place in the normal working situation, using the actual tools, equipment, documents etc.]	ECS 2013	Existing (to be replaced)	As above.
Ability - training	Did the training for your staff have any of the following objectives...? - Increase awareness on health and safety issues and hazard prevention measures - Improve and extend the skills used in their current jobs - Provide the skills needed for employees to take on a different job position - To enable employees to rotate tasks with colleagues		Existing (to be replaced)	The options in this question could perhaps be replaced. Two examples from other surveys are given below. Response management questionnaire: 'What is the main aim of the training policies implemented in your organisation? 1. Preparing employees for a change in technology or organisation of work in the company; 2. Preparing employees for a change of post or responsibility; 3. Allowing employees to obtain a recognised qualification; 4. Improving general training for individuals (not necessarily related to the post they occupy); 5. Health and safety training 6. Another aim (specify); 7. No training implemented; 9. DK.'

Theme	Question and response scale	Source	Existing/New	Comment
				<p>Estate agents employer survey: ‘What are the reasons for training?’</p> <ul style="list-style-type: none"> • New staff have skill shortages • Existing staff have skills gaps • New staff have knowledge shortages • Existing staff have knowledge gaps • Career progression • Training is necessary to fulfil professional standards • Public opinion/ perceived sign of professionalism’
Ability - recruitment	<p>Do you agree or disagree with the following statements about the human resource management strategy in this establishment?</p> <ul style="list-style-type: none"> - The majority of employees who had a temporary contract got a further contract afterwards (to be cut) - Employees are hired with the intention to employ them for a long time (to be cut) - When recruiting the management usually look first whether there are any suitable internal candidates (to be amended) 	ECS 2013	Existing (to be changed)	<p>This question focuses on the establishment’s recruitment strategy – whether a temporary contract leads to a permanent role; whether the establishment aims to hire employees for the long-term; and whether the management look internally first when they come to hire staff.</p> <p>While the first two statements are likely to be cut, the last statement is the more important statement about whether recruitment tends to look in or out.</p>
Ability - recruitment	Does the management encounter any of the following problems at this establishment currently? [other options available]	ECS 2013	Existing (to be changed)	This question focuses on any problems with recruitment, including problems finding employees with required skills; employee retention; and motivation, but may suffer from social

Theme	Question and response scale	Source	Existing/New	Comment
	<ul style="list-style-type: none"> - Difficulties in finding employees with the required skills - Difficulties in retaining employees - A need to reduce staff 			desirability bias. However, the question about ‘difficulties in finding employees with the required skills’ is an important one. It could be amended to ask what proportion of new vacancies take a long time to fill because of ‘difficulties in finding employees with the required skills’.
Motivation – employees (through manager surveys)	<p>For each of these variable payment options on top of basic pay, could you please tell me whether or not they are available to at least some employees in your establishment?</p> <ul style="list-style-type: none"> • Payment by results, for example piece rates, provisions, brokerages or commissions • Variable extra pay linked to the individual performance following management appraisal • Variable extra pay linked to the performance of the team, working group or department • Variable extra pay linked to the results of the company or establishment (profit sharing scheme) • Variable extra pay in form of share ownership scheme offered by the company 	ECS 2013	Existing	This existing ECS question captures the pay systems that may affect employees’ extrinsic motivation. This aspect of motivation relates mainly to financial reward and particularly to gainsharing (for example, financial reward linked to company performance).
Motivation – employees (through manager surveys)	Does the management encounter any of the following problems at this establishment currently?	ECS 2013	Existing (to be replaced)	

Theme	Question and response scale	Source	Existing/New	Comment
	- Low motivation of employees			
Motivation – employees (through manager surveys)	<p>Does the following statement describe the prevalent characteristics of your organisation?</p> <p>- We regularly challenge all our employees to try out new and innovative ways to do their work [10-point scale]</p>	Modified from BPSS	New	<p>This question could be viewed as being a proxy for employees' intrinsic motivation because it relates to employees being challenged in their work. Few of the skills surveys analysed for this paper included such questions, and of those that did, most were employee surveys. The BPSS employer survey contained a version of this question aimed at employers, and related it to managerial choice (see also below).</p> <p>A more direct approach could be to ask what proportion of employees are regularly challenged in and committed to their work. However, it may be difficult for the management respondents to be able to answer this type of question knowledgeably.</p>
Motivation – organisational trust	<p>I will now read out a few statements describing views on employment relations at this establishment. Please tell me, based on your experiences at this establishment, to what extent you agree or disagree [1-5 scale] with the following statements?</p> <p>- The employee representation can be trusted</p> <p>- There is a climate of trust between management and employees</p>	Modified from ECS 2013	Existing	<p>The organisational trust aspect of motivation is less well-captured in the ECS 2013.</p> <p>There is a question that asks about whether employer representation in the organisation 'can be trusted'. The ECS Employee Representative questionnaire has a counterpart question, asking to what extent management can be trusted, and another question on the work climate, which could also be used to measure the trust dimension. The employer and employee representative surveys on trust could be combined to shed light on whether trust in an establishment is how it appears to be to the managers.</p>

Theme	Question and response scale	Source	Existing/New	Comment
				The employee representation trust question could be framed in a broader employment relations framework, and asking whether there is a climate of trust in the establishment. This question could be compared with measures of extent of skills utilisation to see whether establishments with a high perceived degree of trust also have more skills utilisation than those that have lower perceived levels of trust.
Motivation - managers	<p>To what extent do the following statements describe the main values of your organisation? [5-point scale, where 5 means "Strongly Agree" and 1 means "Strongly Disagree"].</p> <ul style="list-style-type: none"> • We have performance-related pay or other 'gainsharing' reward systems in place • We ensure that employees are challenged in their work and encourage them to do their jobs in an innovative way • We develop and maintain an organisational 'climate of trust' and offer workers a long-term stake in the company. • We routinely give employees responsibility and authority to problem solve as part of their everyday work • We offer employees greater autonomy and control over decisions related to how they do 	Adapted from BPSS and from the Appelbaum et al (2000) AMO framework	New	<p>Managers' motivation can include their business strategy (competitive and product market strategy – for example, managers are incentivised by business profitability and performance); practical aspects of running the business, such as HRM and recruitment practices, and their own values.</p> <p>A battery of questions related to management's extrinsic and intrinsic motivation could be included, by framing the question in terms of management values (Osterman, 1994; Sung and Ashton, 2005). The statements in this question come from the AMO framework (motivation and opportunity, Table 2). Responses to these responses could be viewed as proxies for management values.</p> <p>Answers to this question could be analysed in conjunction with measures of ability, employees' motivation, opportunity to make use of skills and the questions centred on contextual factors (see below). For example, an establishment with a complex product market strategy might be expected to have</p>

Theme	Question and response scale	Source	Existing/New	Comment
	<p>their work</p> <ul style="list-style-type: none"> • There are practices in place to enable employees to share their ideas within the wider organisation. 			<p>management with employee-development-orientated values.</p> <p>For suggested questions on business strategies, as Table 9 (contextual factors).</p> <p>For questions relating to HRM and recruitment, see ‘Ability’ in this table, in particular the training and recruitment sections.</p>
Motivation - managers	<p>Do the following statements describe the prevalent characteristics of your organisation? Please rate the following statements using a 10-point scale, where 10 means "Strongly Agree" and 1 means "Strongly Disagree".</p> <ul style="list-style-type: none"> • ‘We ensure that employees grow in their jobs by learning new skills and developing themselves’ • ‘We regularly challenge all our employees to try out new and innovative ways to do their work’ • ‘We regularly highlight our appreciation of employees' contributions towards the company's success’ • ‘We reward (both monetary and otherwise) and formally recognise any employee who sets a positive example to others’ 	BPSS	New	<p>This BPSS question asks managers to consider to what extent they agree or disagree with the prevalent characteristics of their establishment. These responses could be viewed as proxies for manager values.</p>

Theme	Question and response scale	Source	Existing/New	Comment
Opportunity – problem solving	Please rate how important the following skills are for the core employee job. Circle one answer for each item: [...] Ability to solve unfamiliar problems [and other items]	MIT Manufacturing Survey	New	
Opportunity – problem solving	Which of the following are included in performance appraisals and which 3 are the most important included in appraisals? [...] Problem solving skills [and other items]	Estate agents employer survey	New	
Opportunity – problem solving	Solving complex problems requiring a solution specific to the situation [and other items]	UKCES ESS	New	
Opportunity – problem solving	<p>What proportion of employees are faced with a new or difficult situation in their work that requires them to think for a while about what to do next? [X%]</p> <p>[Original PIAAC question: Think of “problem solving” as what happens when you are faced with a new or difficult situation which requires you to think for a while about what to do next.</p> <p>- How often ^Are/Were you usually faced by relatively simple problems that ^Take/Took no more than 5 minutes to find a good solution?</p> <p>- And how often ^Are/Were you usually confronted with more complex problems that</p>	PIAAC	New, modified from PIAAC to be usable in an employer survey	A question about the proportion of employees who engage in problem solving could be introduced.

Theme	Question and response scale	Source	Existing/New	Comment
	^Take/Took at least 30 minutes to find a good solution? The 30 minutes only refers to the time needed to THINK of a solution, not the time needed to carry it out.			
Opportunity – autonomy	Approximately what percentage of employees have the possibility to adapt - within certain limits - the time when they begin or finish their daily work according to their personal needs or wishes? [X%]	ECS 2013	Existing	Although this question is associated with job autonomy, its fundamental aim in ECS is to capture the proportion of staff on flexi-time arrangements in an establishment.
Opportunity – autonomy	Who normally decides on the planning and execution of the daily work tasks of the employees at this establishment? [Response: The employee undertaking the tasks; Managers or supervisors; Both employees and managers or supervisors]	ECS 2013	Existing	This question aims to establish the extent of employee autonomy, but there are plans to replace this question to link it to other themes in the ECS such as team autonomy (an aspect of HPW).
Opportunity – autonomy	If you think about the tasks to be performed by the teams: Do the team members decide among themselves by whom the tasks are to be performed, or is there usually a superior distributing the tasks within the team? [Response: Team members decide among themselves; Tasks are distributed by a superior]	ECS 2013	Existing	A question following up another question on workplace team working. However, there are plans to replace this question with a more direct question about team autonomy.
Opportunity – communication	In this establishment, which of the following practices are used to involve employees in how work is organised? • Regular meetings between employees and	ECS 2013	Existing, could be replaced or rephrased	This question and others like it tend to focus more on the communication practices in place at the establishment and less on the extent to which workers are involved. For example, an establishment that has regular meetings between employees and managers may still only use these meetings for dissemination of

Theme	Question and response scale	Source	Existing/New	Comment
	<p>immediate manager</p> <p>Regular staff meetings open to all employees at the establishment [and other options]</p>			information rather than involving workers in decision making.
Opportunity – communication	At your establishment, how often do employees/staff make helpful suggestions for improving how things could operate within the organisation?	MIT Manufacturing Survey	New	This type of question builds on the question above by asking how often employees make suggestions, for example, to what extent the communication channels are used. To save space, an option could be added into the existing ECS battery above, to focus on meaningful consequences of communication at the establishment.
Opportunity – communication	To what extent would you say that individual [title of the largest occupational group] here have involvement in decisions over how their work is organised? [A lot, Some, A little, None]	WERS Management questionnaire	New	Similarly, this WERS question focuses on employee involvement, rather than meetings. It may also be possible to ask about any outcomes that have taken place as a result of employee involvement, perhaps in the same question as an extra battery item.

Table 9: List of suggested contextual factors in relation to understanding of skills utilisation within companies

Theme	Question and response scale	Source	Existing/New	Comment
Country of establishment location	Known by default through survey design	ECS 2013	Existing	While the country in which the establishment is registered is known, the country of its parent company is not known. If the parent company was located in another country with a different national skills strategy to the country in which the subsidiary establishment was located, this could lead to some clashes between national skills strategies that may not have occurred if both the parent and the subsidiary were located in the same country.
Company type	Is the establishment at this address a single independent company or organization with no further branch-offices, production units or sales units elsewhere in [country]? Or is it one of a number of establishments at different locations in [country] belonging to the same company or organization? 1 - A single independent company/organisation 2 - One of a number of different establishments 9 - No answer	ECS 2013	Existing	The target population of the ECS survey are establishments (similar to WERS, etc.).
Establishment type	Is it your company/organisation headquarters or is it a subsidiary site? 1 - Headquarters	ECS 2013	Existing	‘For analytical purposes it makes a difference whether a workplace is the headquarters or a subsidiary site. This information is also relevant to assess sample performance.’ (internal notes)

Theme	Question and response scale	Source	Existing/New	Comment
	2 - Subsidiary site 9 - No answer			
Establishment size	<p>Approximately how many employees work in this establishment? Please include all employees that are formally based in this establishment, regardless of whether they are physically present or carry out their work outside of the premises.</p> <p>Each employee is counted as one person, regardless whether they are working full-time or part-time (= headcount). Your best estimate is good enough.</p> <p>[follow-up: Could you please give me your best estimate using the following categories?</p> <p>1 - 0 to 9 employees</p> <p>2 - 10 to 19 employees</p> <p>3 - 20 to 49 employees</p> <p>4 - 50 to 249 employees</p> <p>5 - 250 to 499 employees</p> <p>6 - 500 or more employees</p> <p>8 Don't know</p> <p>9 No answer]</p>	ECS 2013	Existing	<p>Size of the establishment in terms of the number of employees at the local premises.</p> <p>NB: Does not consider size of the company as a whole.</p>

Theme	Question and response scale	Source	Existing/New	Comment
Establishment sector	Is your establishment part of... 1 - The private sector 2 - The public sector 8 - Don't know 9 - Don't answer	ECS 2013	Existing	Broader sector classification (partly related to employer motivation – more likely to be profit driven if working in the private sector.
Establishment sector	What is the main activity of the establishment?	ECS 2013	Existing	The question is asked open-ended about the main activity (sector of activity) in the establishment, and coded after the fact into the NACE classification.
Product market strategy	What best describes your establishment's primary product market strategy? [Pick one option only] - producing goods and services competing on price - producing goods and services based on premium quality - producing goods and services based on product innovation or innovative work practices	Recommended by Warhurst and Luchinskaya	New	This question combines the price elements of competitive strategies (see questions below) and the product quality/innovation elements of product market strategies in one question, as per Schuler and Jackson (1987). This question, together with questions on employee development and management motivation/values could be used to map whether skills utilisation is more likely to occur in establishments that have a complex product mix.
Product market strategy	Please rate the following statements using a 5-point scale, where 5 means "Strongly Agree" and 1 means "Strongly Disagree" • This establishment relies on developing	BPSS	New	Suggested question on product market strategy.

Theme	Question and response scale	Source	Existing/New	Comment
	<p>unique products or services</p> <ul style="list-style-type: none"> • Compared to others in your industry, there was a substantial amount of customisation depending on the requirements of customers or users of your services 			
Product market strategy	[Using the scale where 1 means demand does not depend at all on quality, and 5 means demand depends heavily on offering superior quality], to what extent would you say that the demand for your [main] product or service depends upon you offering better quality than your competitors?	WERS management questionnaire	New	WERS questions focus specifically on the demand for the establishment's main product or service.
Competitive strategy	<p>Please rate the following statements using a 5-point scale, where 5 means "Strongly Agree" and 1 means "Strongly Disagree"</p> <ul style="list-style-type: none"> • Compared to others in your industry, the competitive success of your establishment's products or services is wholly dependent on price. • You compete in a market for premium quality products or services 	BPSS	New	Suggested question on competitive strategy.
Competitive strategy	[Using the scale where 1 means demand does not depend at all on price, and 5 means demand depends heavily on offering lower prices], to what extent would you say that the demand for your [main] product or service depends upon offering lower prices	WERS management questionnaire	New	WERS questions focus specifically on the demand for the establishment's main product or service.

Theme	Question and response scale	Source	Existing/New	Comment
	than your competitors?			

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